Stoller
Hanford Office

HGLP-LDR-012

299-W11-47 (C4990)
Log Data Report

Borehole Information:

Borehole:	299-W11-47 (C4990)		Site:	East of T Tank Farm	
Coordinates (WA St Plane)		GWL[1] (ft):	242.8	GWL Date:	03/20/06
North	East	Drill Date	Elevation (TOC)	Total Depth (ft)	Type
Unknown	Unknown	03/06	Unknown	405.5	Cable

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Threaded steel	0.85	12 3/4	12	3/8	0.85	191
Threaded steel	1.6	10 3/4	9 3/8	11/16	1.6	405.5

Borehole Notes:

Casing diameter and stickup measurements for the casings were acquired using a caliper and steel tape. Measurements are rounded to the nearest 1/16 inch. Logging data acquisition is referenced to the ground surface. This borehole was logged in January 2006 through the 12-in. casing (0-191 ft) using logging system G1E and in March, 2006 through the 10-in. casing (190-404 ft) using logging systems G4A and G4G.

Spectral Gamma Logging System (SGLS) Equipment Information:

Logging System:	Gamma 1E		Type:	SGLS (70%) SN: 34TP40587A
Effective Calibration Date:	01/10/06	Calibration Reference:	DOE/EM-GJ1106-2006	
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0	

Logging System:	Gamma 4A		Type:	SGLS (35%) SN: 34TP20893A
Effective Calibration Date:	05/11/05	Calibration Reference:	DOE/EM-GJ891-2005	
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0	

Logging System:	Gamma 4G		Type:	SGLS (35%) SN: 34TP10967A
Effective Calibration Date:	03/16/06	Calibration Reference:	DOE/EM-GJ1162-2006	
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0	

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2 Repeat	3	4	5
Date	01/26/06	01/27/06	01/27/06	03/17/06	03/20/06
Logging Engineer	Pearson	Pearson	Pearson	Spatz	Spatz
Start Depth (ft)	191.0	90.0	68.0	404.0	309.0
Finish Depth (ft)	69.0	69.0	0.0	308.0	190.0
Count Time (sec)	100	100	100	200	200
Live/Real	R	R	R	R	R
Shield (Y/N)	N	N	N	N	N

Log Run	1	2 Repeat	3	4	5
MSA Interval (ft)	1.0	1.0	1.0	1.0	1.0
ft/min	N/A[2]	N/A	N/A	N/A	N/A
Pre-Verification	AE153CAB	AE154CAB	AE154CAB	DG021CAB	DA141CAB
Start File	AE153000	AE154000	AE154022	DG021000	DA141000
Finish File	AE153122	AE154021	AE154090	DG021096	DA141119
Post-Verification	AE153CAA	AE154CAA	AE154CAA	DG021CAA	DA141CAA
Depth Return Error (in.)	0	N/A	+ 1	- 2	- 2
Comments	Fine-gain adjustment after file -001	No fine-gain adjustments	No fine-gain adjustments	No fine-gain adjustments	No fine-gain adjustments

Log Run	6 Repeat				
Date	03/21/06				
Logging Engineer	Spatz				
Start Depth (ft)	212.0				
Finish Depth (ft)	190.0				
Count Time (sec)	200				
Live/Real	R				
Shield (Y/N)	N				
MSA Interval (ft)	1.0				
ft/min	N/A				
Pre-Verification	DG031CAB				
Start File	DG031000				
Finish File	DG031022				
Post-Verification	DG031CAA				
Depth Return Error (in.)	0				
Comments	No fine-gain adjustments				

Logging Operation Notes:

Logging was conducted with a centralizer on the sonde. Measurements are referenced to the ground surface. Repeat sections were collected in this borehole to evaluate the logging system's performance.

Analysis Notes:

Analyst:	Henwood	Date:	10/20/06	Reference:	GJO-HGLP 1.6.3, Rev. 0

Pre-run and post-run verifications for the logging systems were performed before and after each day's data acquisition. Acceptance criteria were met.

SGLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated using EXCEL worksheet templates identified as G1EJan06.xls, G4GMar06.xls, and G4AMay05.xls for logging systems Gamma 1E, 4G, and 4A, respectively. A casing correction for 3/8-in.-thick casing is applied to the SGLS data acquired from 0 to 191 ft and for 11/16-in.-thick casing from 190 to 404 ft. A correction for water inside the casing is applied below 242.8 ft.

Results and Interpretations:

137Cs is detected near its MDL at a few sporadic depth locations throughout the borehole. These detections are likely the result of statistical fluctuations in the routine processing software and are not valid.

The naturally occurring radionuclides indicate some variation throughout the borehole. The most notable variation is indicated between 100 and 120 ft and is attributed to the "caliche" sediment layer.

The repeat sections for the SGLS indicate good agreement for the naturally occurring and man-made radionuclides.

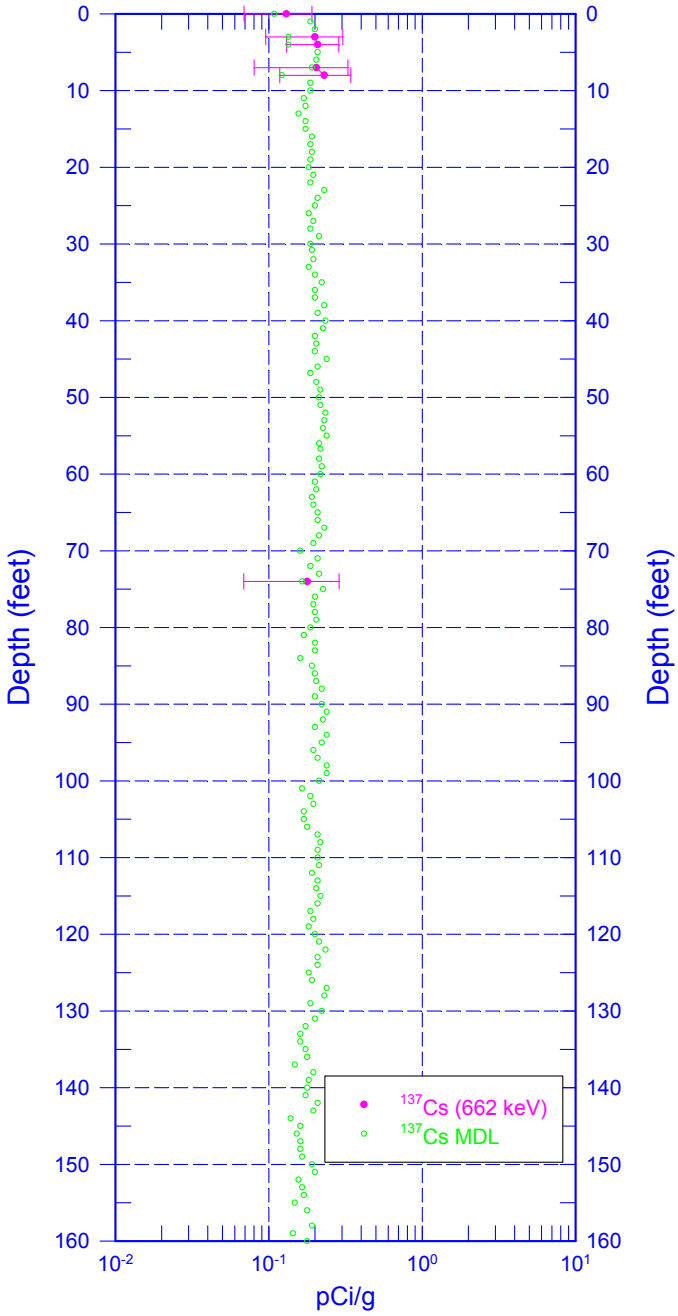
List of Plots:

Depth Scale: 1”=20 ft except for repeat logs or as noted

Man-Made Radionuclides
Natural Gamma Logs
Combination Plot
Total Gamma and Dead Time
Repeat Section of Natural Gamma Logs (69-90 ft)
Repeat Section of Natural Gamma Logs (190-212 ft)
Combination Plot (0-420 ft) Depth scale: 1”=70 ft

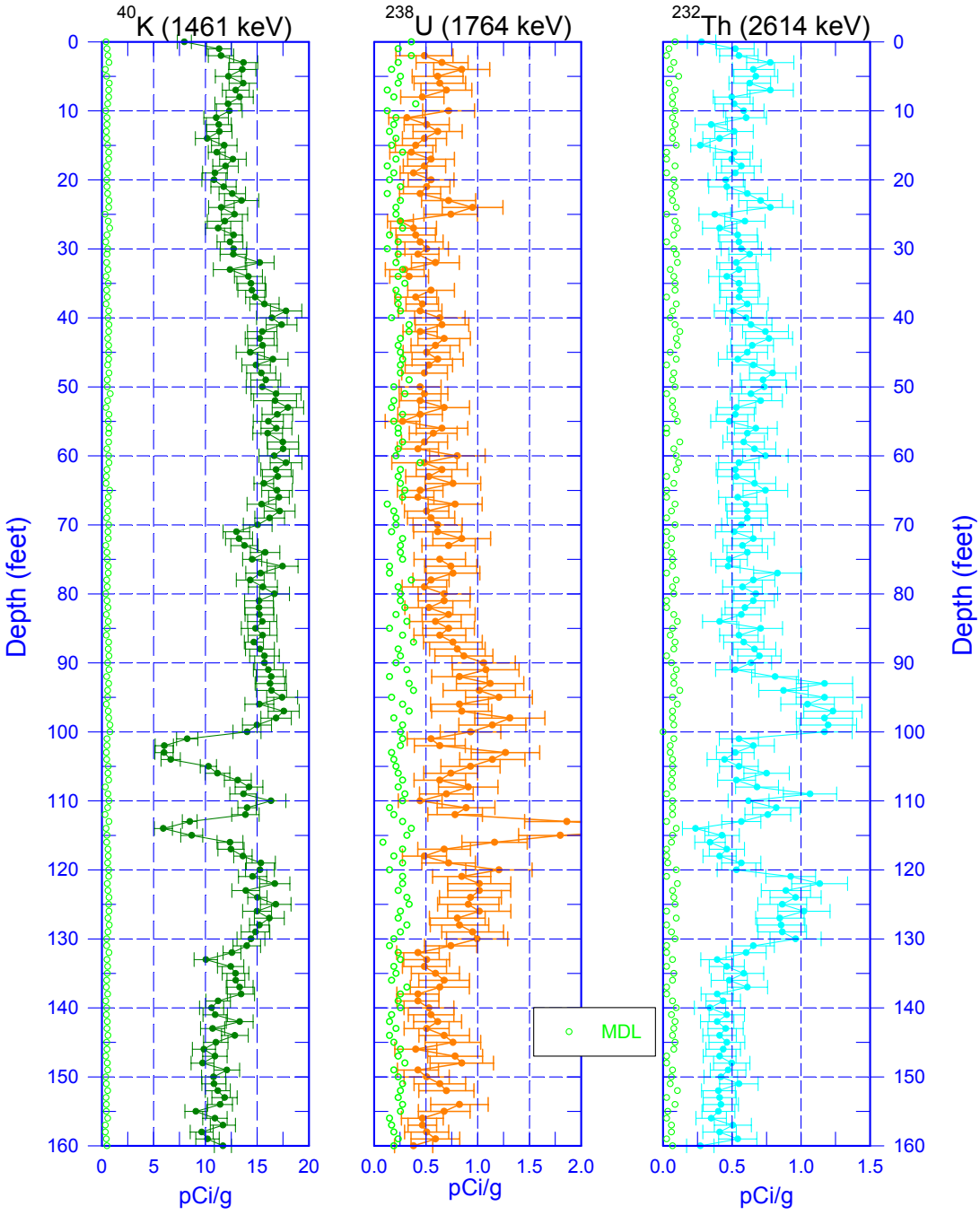
[1] GWL – groundwater level
[2] N/A – not applicable

299-W11-47 (C4990)
Manmade Radionuclides



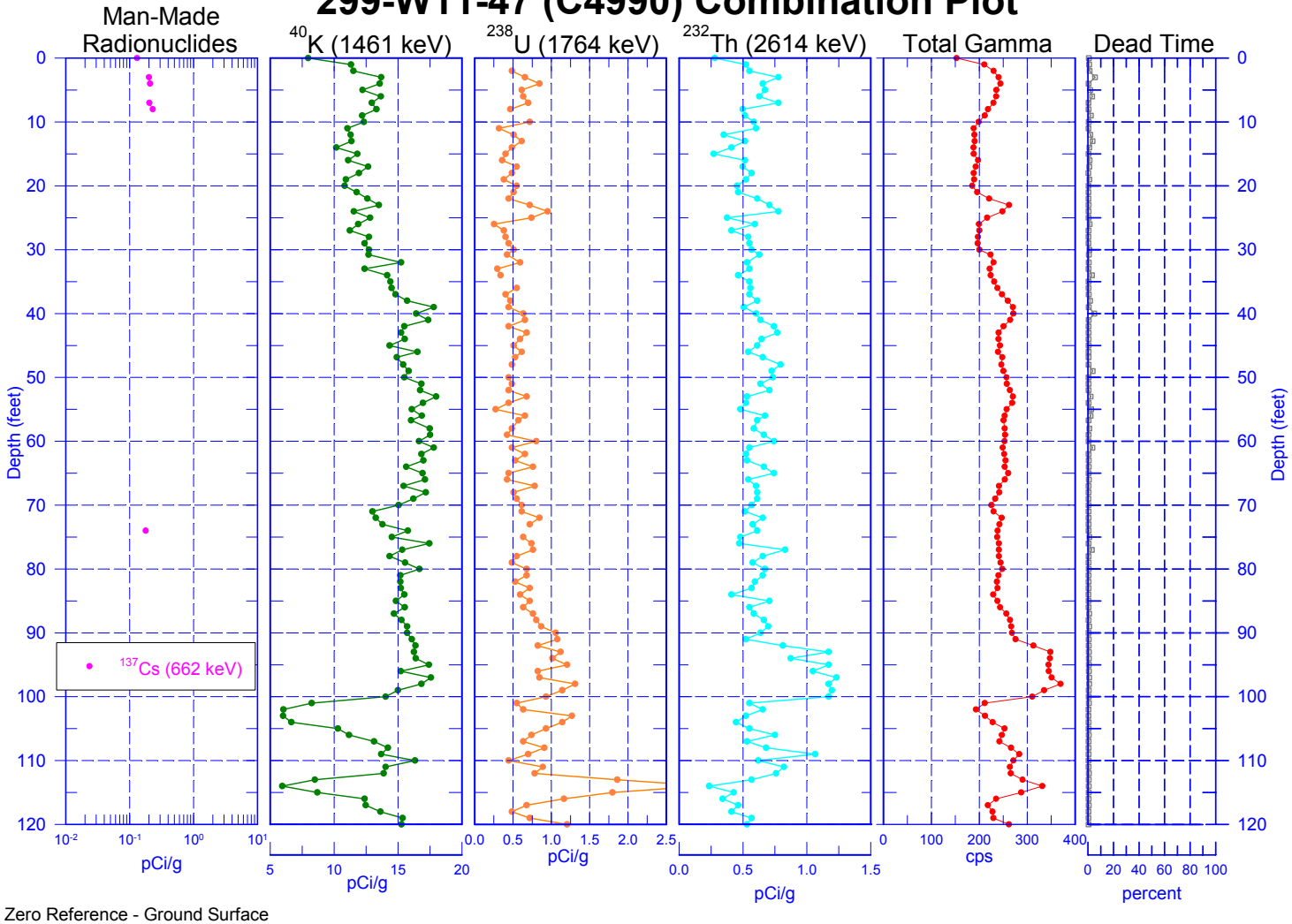
Zero Reference - Ground Surface

299-W11-47 (C4990)
Natural Gamma Logs



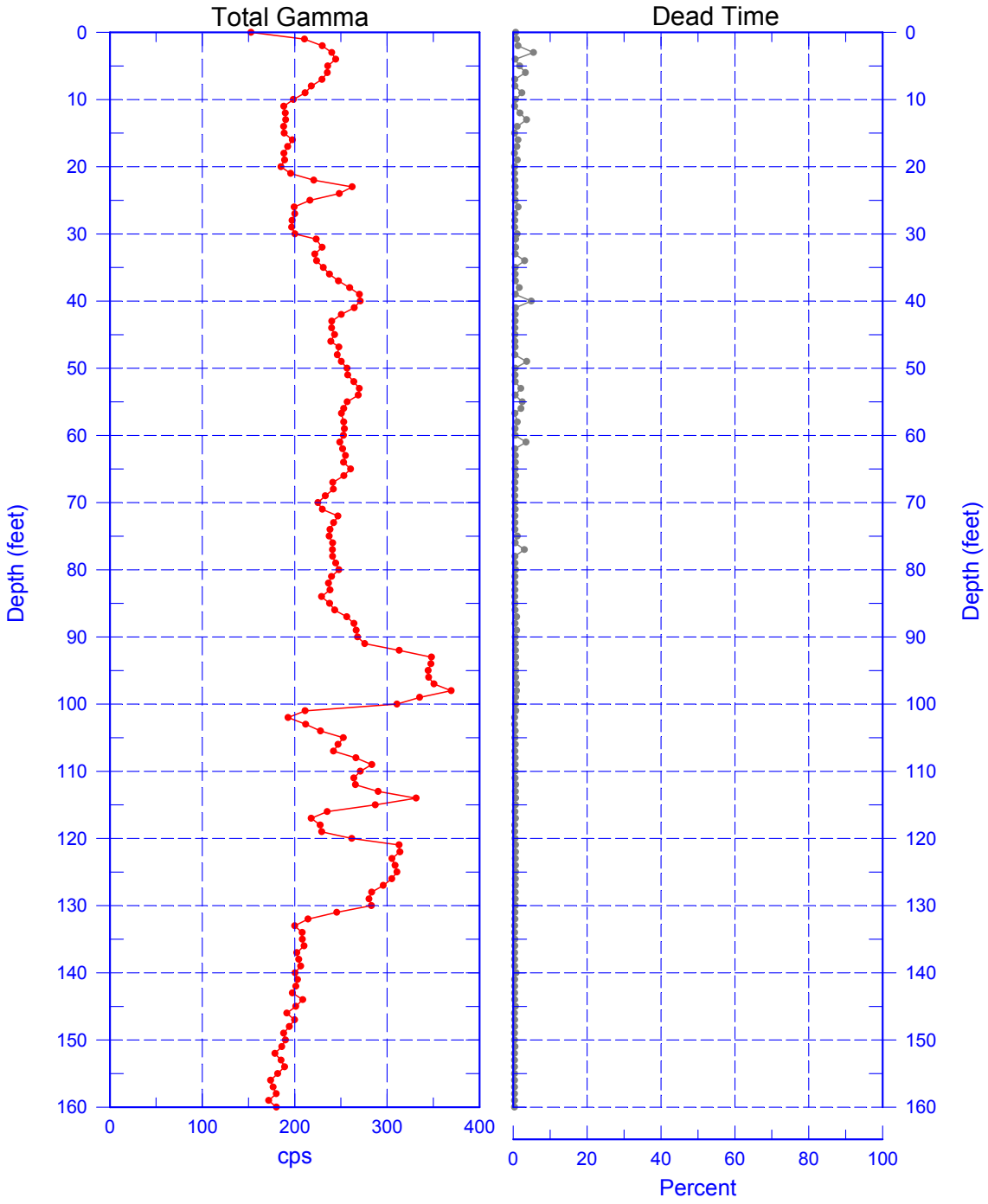
Zero Reference - Ground Surface

299-W11-47 (C4990) Combination Plot



Zero Reference - Ground Surface

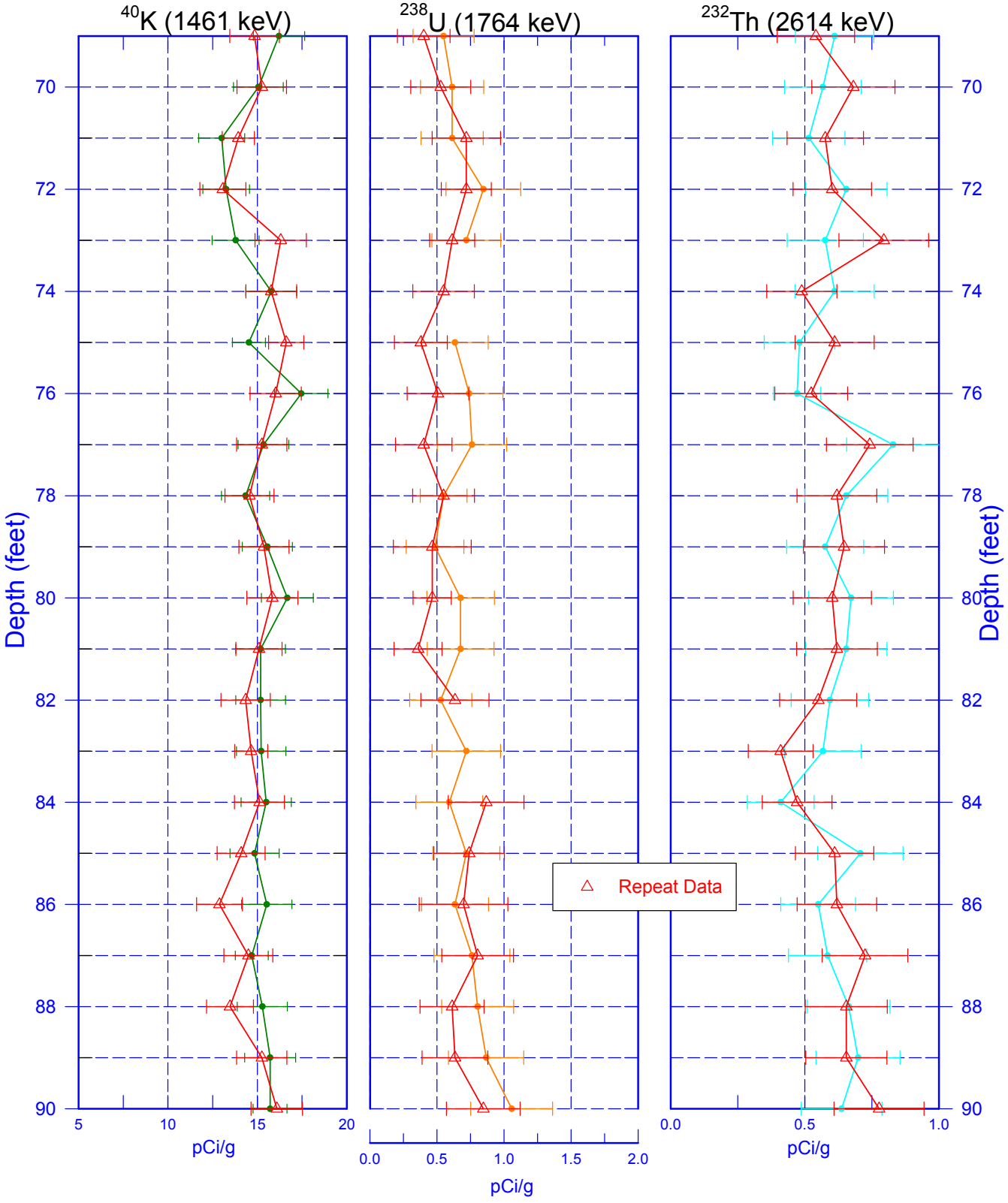
299-W11-47 (C4990)
Total Gamma & Dead Time



Reference - Ground Surface

299-W11-47 (C4990)

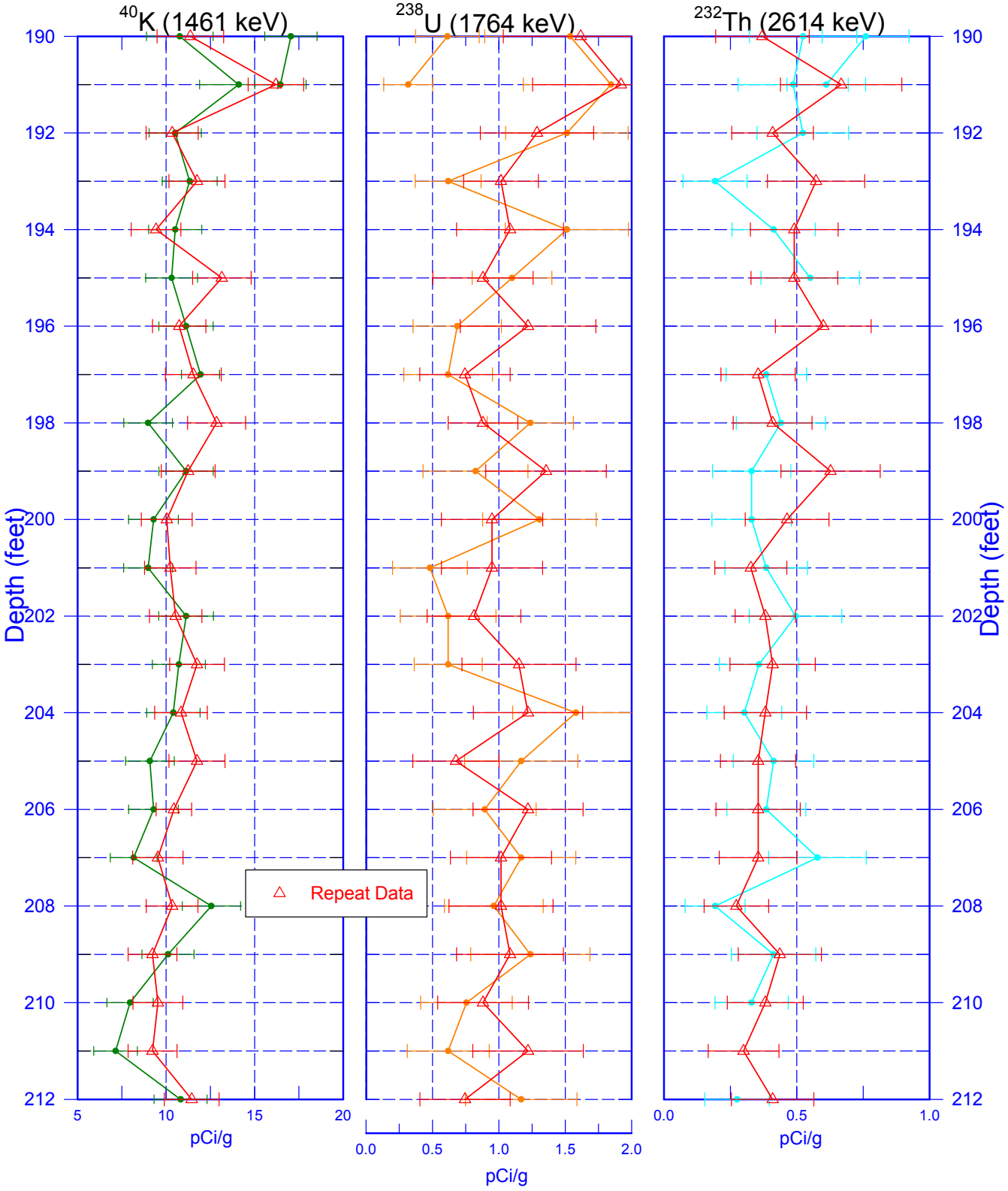
Repeat Section of Natural Gamma Logs



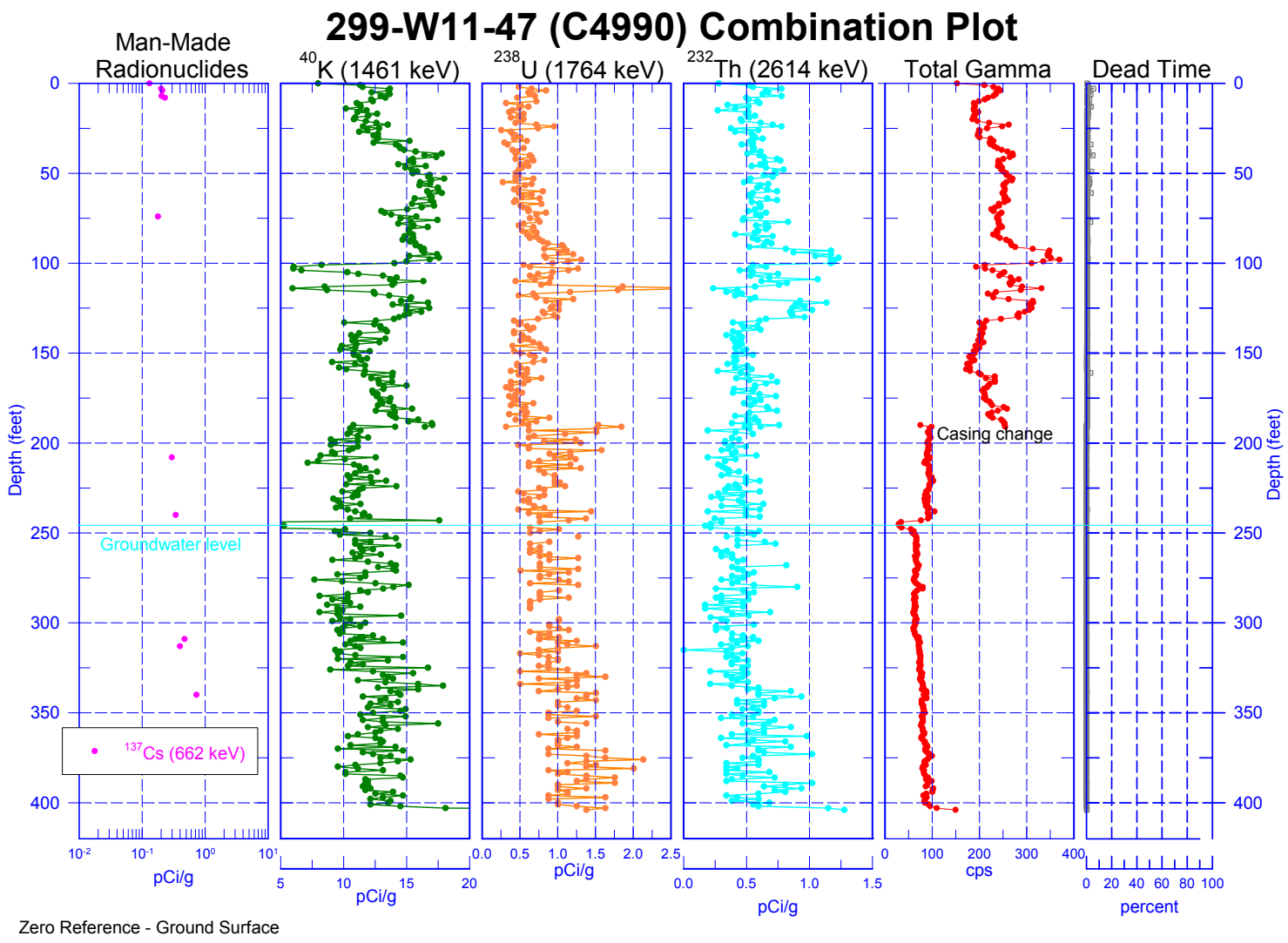
Zero Reference - Ground Surface

299-W11-47 (C4990)

Repeat Section of Natural Gamma Logs



Zero Reference - Ground Surface


299-W11-47 (C4990) Combination Plot
Man-Made Radionuclides
40K (1461 keV)
238U (1764 keV)
232Th (2614 keV)
Total Gamma
Dead Time
Depth (feet)
Groundwater level
Casing change
137Cs (662 keV)
pCi/g
cps
percent
Zero Reference - Ground Surface